IN THE CLAIMS:

Following is the list of pending claims.

1 (Original). A method of upstream power back-off in a broadband communication system, said method comprising:

transmitting a global desired receive power spectral density (GDR PSD);

determining an upstream transmit power spectral density prior to upstream data transmission using said transmitted GDR PSD; and

providing a management system enabling operator configuration of said GDR PSD.

2 (Original). The method of Claim 1 further comprising enabling transmission of said GDR PSD, during an initialization phase, from an associated line termination interface to a network termination interface which determines said upstream transmit power spectral density prior to upstream transmission.

3 (Original). The method of Claim 2, wherein said line termination interface further enables transmission of a nominal loop length, during initialization, wherein said upstream transmit power spectral density associated with said network termination interface is determined by:

$$S(f) = \frac{L_r}{L_i}\frac{S_{GDR}(f)}{|H(f)|^2},$$

where L_r is a non-zero value representing said nominal loop length, L_i is a length of a transmission loop associated with said network termination interface, $S_{GDR}(f)$ is said GDR PSD, and $|H(f)|^2$ is an estimated insertion loss of said associated transmission loop.

4 (Original). The method of Claim 3, wherein said upstream transmit power spectral density is no greater than:

$\min(S(f), S_{\max}(f))$,

where $S_{\max}$ is a predetermined allowed upstream transmit power spectral density.

5 (Original). The method of Claim 3, wherein said upstream transmit power spectral density is determined by:

$$S(f) = \frac{S_{GDR}(f)}{|H(f)|^2}.$$

for transmission of a zero value for said nominal loop length.

6 (Original). The method of Claim 5, wherein said upstream transmit power spectral density is no greater than:

$\min(S(f), S_{\max}(f))$,

where $S_{\max}$ is a predetermined allowed upstream transmit power spectral density.

7 (Original). The method of Claim 1, wherein said GDR PSD is further defined as:

$$S_{GDR}(f) = \frac{\eta(f)}{L_r \cdot K_{FEXT} \cdot f^2},$$

where $\eta(f)$ is an assumed reference noise profile, L_r is a determined nominal loop length, and K_{FEXT} is a constant representing the coupling from a first loop to an adjacent loop in said communication system.

8 (Original). The method of Claim 7, wherein said GDR PSD and nominal loop length are transmitted from said line termination interface to said network termination interface during an initialization phase, wherein power back-off associated with said network termination interface is determined prior to upstream transmission.

9 (Original). The method of Claim 1, wherein, for a constant power back-off approach, said upstream transmit power spectral density is defined as a ratio of said GDR PSD to an associated loop insertion loss at a predetermined frequency.

10 (Original). The method of Claim 1, wherein, for reference length and multiple reference length power back-off approaches, said upstream transmit power spectral density is defined as a ratio of said GDR PSD to an associated loop insertion loss at a set of frequencies.

11 (Original). The method of Claim 1, wherein, for equalized-FEXT and reference noise power back-off approaches, said upstream transmit power spectral density is defined as a ratio of said GDR PSD to an associated loop insertion loss which is normalized by a ratio of a reference loop length to a transmit loop length.

12 (Original). A system of upstream power back-off in a broadband communication network, said system comprising:

a line termination interface enabling transmission of a predetermined global desired receive power to spectral density (GDR PSD);

a network termination interface enabling determination of an upstream transmit power spectral density prior to upstream data transmission using said transmitted GDR PSD; and

a management interface enabling operator configuration of said GDR PSD.

13 (Original). The system of Claim 12, wherein said line termination interface further enabling transmission of said GDR PSD to said network termination interface during an initialization phase, wherein said network termination interface subsequently determines said upstream transmit power spectral density.

14 (Original). The system of Claim 13, wherein said line termination interface further enabling transmission of a predetermined nominal loop length, during initialization, wherein said upstream transmit power spectral density associated with said network termination interface is determined by:

$$S(f) = \frac{L_r}{L_i} \frac{S_{GDR}(f)}{|H(f)|^2},$$

where L_r is a non-zero value representing said nominal loop length, L_i is a length of a transmission loop associated with said network termination interface, $S_{GDR}(f)$ is said GDR PSD, and $|H(f)|^2$ is an estimated insertion loss of said associated transmission loop

15 (Original). The system of Claim 14, wherein said upstream transmit power spectral density is no greater than:

$$\min(S(f), S_{\max}(f)),$$

where $S_{\max}$ is a predetermined allowed upstream transmit power spectral density.

16 (Original). The system of Claim 14, wherein said upstream transmit power spectral density is determined by:

$$S(f) = \frac{S_{GDR}(f)}{|H(f)|^2}.$$

for transmission of a zero value for said nominal loop length.

17 (Original). The method of Claim 12, wherein said GDR PSD is further defined as:

$$S_{GDR}(f) = \frac{\eta(f)}{L_r \cdot K_{FEXT} \cdot f^2},$$

where $\eta(f)$ is an assumed reference noise profile, L_r is a nominal loop length, and K_{FEXT} is a constant representing the coupling from a first loop to an adjacent loop in the cable.

18 (Original). The system of Claim 17, wherein said line termination interface further enables transmission of said GDR PSD and nominal loop length during an initialization phase.

19 (Original). The method of Claim 12, wherein, for a constant power back-off approach, said upstream transmit power spectral density is defined as a ratio of said GDR PSD to an associated loop insertion loss at a predetermined frequency.

20 (Original). The method of Claim 12, wherein, for reference length and multiple reference length power back-off approaches, said upstream transmit power spectral density is defined as a ratio of said GDR PSD to an associated loop insertion loss at a set of frequencies.

21 (Original). The system of Claim 12, wherein, for equalized-FEXT and reference noise power back-off approaches, said upstream transmit power spectral density is defined as a ratio of said GDR PSD to an associated loop insertion loss which is normalized by a ratio of a reference loop length to a transmit loop length.

22 (Original). A method of upstream power back-off in a broadband communication system comprising at least two transmission loops of differing lengths, said method comprising:

determining a global desired receive power spectral density (GDR PSD) and a nominal loop length;

transmitting said GDR PSD and nominal loop length, wherein said transmission is enabled by a line termination type interface;

receiving said GDR PSD and nominal loop length, wherein said receiving is enabled by a network termination type interface;

said network termination type interface further enabling determination of an upstream transmit power spectral density defined as:

$$S(f) = \frac{L_r}{L_i} \frac{S_{GDR}(f)}{|H(f)|^2},$$

where L_l is a determined length of a transmission loop associated with said network termination type interface, $|H(f)|^2$ is an estimated insertion loss of said associated transmission loop, and $S_{GDR}(f)$ represents said GDR PSD defined as:

$$S_{GDR}(f)=\frac{\eta(f)}{L_r \cdot K_{FEXT} \cdot f^2},$$

where $\eta(f)$ is an assumed reference noise profile, L_r is a nominal loop length, and K_{FEXT} is a constant representing the coupling from a first loop to an adjacent loop in communication system the cable.